



SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Bazin, Hervé  
Latinne, Dominique  
Kaplan, Ruth  
Kieber-Emmons, Thomas  
Postema, Christina E.  
White-Scharf, Mary
- (ii) TITLE OF INVENTION: LO-CD2a Antibody and Uses  
Thereof for Inhibiting  
T-Cell Activation and  
Proliferation
- (iii) NUMBER OF SEQUENCES: 96
- (iv) CORRESPONDENCE ADDRESS:
- (A) ADDRESSEE: Carella, Byrne, Bain, Gilfillan,  
Cecchi, Stewart & Olstein
- (B) STREET: 6 Becker Farm Road
- (C) CITY: Roseland
- (D) STATE: New Jersey
- (E) COUNTRY: U.S.A.
- (F) ZIP: 07068
- (v) COMPUTER READABLE FORM:
- (A) MEDIUM TYPE: 3.5 inch diskette
- (B) COMPUTER: IBM PS/2
- (C) OPERATING SYSTEM: MS-DOS

T760X

76

76

74

(D) SOFTWARE: WordPerfect 5.1

(vi) CURRENT APPLICATION DATA:

- (A) APPLICATION NUMBER: 08/477,989
- (B) FILING DATE: 07-JUN-1995
- (C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

- (A) APPLICATION NUMBER: 08/407,009
- (B) FILING DATE: 29-MAR-1995
- (A) APPLICATION NUMBER: 08/119,032
- (B) FILING DATE: 09-SEP-1993
- (A) APPLICATION NUMBER: 08/027,008
- (B) FILING DATE: 05-MAR-1993

(viii) ATTORNEY/AGENT INFORMATION:

- (A) NAME: Olstein, Elliot M.
- (B) REGISTRATION NUMBER: 24,025
- (C) REFERENCE/DOCKET NUMBER: 61750-147

(ix) TELECOMMUNICATION INFORMATION:

- (A) TELEPHONE: 201-994-1700
- (B) TELEFAX: 201-994-1744

2-  
15

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 32 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

AACCCGGGGA CATTGAGCTG ACCCAGTCTC AA

32

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

CAGTCGACTA CAGTTGGTGC AGCATCAGC

29

76

78

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

AACCCGGGGA GGTCCAGCTG CAGCAGTCTG G

31

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

AAGTCGACCC AGTGGATAGA CCGATGG

27

42  
77

79

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

CCGCAAGCTT CATGGGATGG AG

22

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

GCTGCTTGGG GACTGGGTCA GCTGGAT

27

-5-  
78

80

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

ATTCAGCTGA CCCAGTCTCC A

21

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 58 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

GATCGGATCC ACCTGAGGAA GCAAAGTTTA AATTCTACTC ACGTTTCAGT TCCAGCTT

58

61  
79

81

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

TCTCCTGCAG TGGGACCTCG GAGTGGACAC C

31

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

GAGGTCCAGC TGCAGCAGTC T

21

7/80

82

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

CGATGTATCA GCTGTCAGTG TGGC

24

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

GCCACACTGA CAGCTGATAC ATCG

24

~~8~~  
81

83



(2) INFORMATION FOR SEQ ID NO: 13:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

CAGAGTGCCT TGGCCCCAGT A

21

(2) INFORMATION FOR SEQ ID NO: 14:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

TACTGGGGCC AAGGCACCCT CGTCACA

27

84

(2) INFORMATION FOR SEQ ID NO: 15:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

GATCGGATCC CTATAAATCT CTGGC

25

(2) INFORMATION FOR SEQ ID NO: 16:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

TTGGATCCGC GGCCGCGTCG ACTACAGTTG GTGCAGCATC AGC

43

~~-10-~~  
82

85

(2) INFORMATION FOR SEQ ID NO: 17:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 41 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

ATGGATCCGC GGCCGCGTCG ACCCAGTGGG TAGACCGATG G

41

(2) INFORMATION FOR SEQ ID NO: 18:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

CCATGGCCTC GAGGGCCCCC CCCCCCCCC C

31

-11  
84

86

(2) INFORMATION FOR SEQ ID NO: 19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

CCTGTTTAGG CCTCTGCTTC ACCCAGTAC

29

(2) INFORMATION FOR SEQ ID NO: 20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

GGATAATGGG TAAATTGCAT GCAGTAATA

29

~~12~~  
85

87

(2) INFORMATION FOR SEQ ID NO: 21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

TGCAAGCTTC ATGATGAGTC CTGTCCAGTC

30

(2) INFORMATION FOR SEQ ID NO: 22:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

AGTAAGCTTC ATGAAATGCA GGTGGATC

28

-13-  
86

88

(2) INFORMATION FOR SEQ ID NO: 23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

GGGAGATTGC TGCAGCTGGA CTTC

24

(2) INFORMATION FOR SEQ ID NO: 24:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:

GATCCCCGGG CCACCATGAT GAGTCCTGTC CAG

33

(2) INFORMATION FOR SEQ ID NO: 25:

~~14~~  
87

89

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 61 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:

AGAATGGCCA CGTCATCCGA CCCCTCAGA GTTTACTATT CTACTATCCA ACTGAGGAAG 60  
C 61

(2) INFORMATION FOR SEQ ID NO: 26:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 34 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

- (A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:

GATCGAATTC GCCACCATGA AATGCAGGTG GATC 34

~~-15~~  
88

90

(2) INFORMATION FOR SEQ ID NO: 27:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 37 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:

CCAGAAAGCT AGCTTGCCAT CCCTATAAAT CTCTGGC

37

(2) INFORMATION FOR SEQ ID NO: 28:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:

Asp Val Val Leu Thr Gln Thr Pro Pro Thr

5

10

Leu Leu Ala Thr Ile Gly Gln Ser Val Ser

15

20

Ile Ser Cys

~~16~~  
89

91



(2) INFORMATION FOR SEQ ID NO: 29:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

Asp Val Val Met Thr Gln Ser Pro Leu Ser

5 10

Leu Pro Val Thr Leu Gly Gln Pro Ala Ser

15 20

Ile Ser Cys

(2) INFORMATION FOR SEQ ID NO: 30:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

Trp Leu Leu Gln Arg Thr Gly Gln Ser Pro

5 10

Gln Pro Leu Ile Tyr

~~17~~  
90

92

## (2) INFORMATION FOR SEQ ID NO: 31:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

Trp Phe Gln Gln Arg Pro Gly Gln Ser Pro

5

10

Arg Arg Leu Ile Tyr

15

## (2) INFORMATION FOR SEQ ID NO: 32:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:

Gly Val Pro Asn Arg Phe Ser Gly Ser Gly

5

10

Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser

15

20

Gly Val Glu Ala Glu Asp Leu Gly Val Tyr

25

30

Tyr Cys

(2) INFORMATION FOR SEQ ID NO: 33:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly

5

10

Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser

15

20

Arg Val Glu Ala Glu Asp Val Gly Val Tyr

25

30

Tyr Cys

(2) INFORMATION FOR SEQ ID NO: 34:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

~~-19~~  
92

94

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys

5

10

(2) INFORMATION FOR SEQ ID NO: 35:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys

5

10

(2) INFORMATION FOR SEQ ID NO: 36:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

~~-20~~  
93

95

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

GCAAGAGATG GAAGCTGGTT GTCCCAAGGT TACCAATAAT GAAGGTGGAC TCTGGGTCAT	60
CACAACATCA CCATTGGTTC C	81

(2) INFORMATION FOR SEQ ID NO: 37:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 72 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

CAACCAGCTT CCATCTCTTG CAGGTCAAGT CAGAGTCTCT TACATAGTAG TGGAAACACC	60
TATTTAAATT GG	72

(2) INFORMATION FOR SEQ ID NO: 38:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 38:

AGATTCCAGT TTGGATACCA AATAAATTAG CGGCTGTGGA GATTGGCCTG GCCTTAGCAA 60

CCAATTTAAA TAGGTGTTTC C 81

(2) INFORMATION FOR SEQ ID NO: 39:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

TTGGTATCCA AACTGGAATC TGGGGTCCCC GACAGGTTCA GTGGCTCAGG GAGTGAACA 60

GATTTACAC TCAAAATCAG T 81

(2) INFORMATION FOR SEQ ID NO: 40:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 72 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

~~22~~  
75

97

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 40:

ATGGGTAAAT TGCATGCAGT AATAAACCCC CACATCCTCA GCTTCCACTC CACTGATTTT 60  
GAGTGTGAAA TC 72

(2) INFORMATION FOR SEQ ID NO: 41:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 63 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 41:

TACTGCATGC AATTTACCCA TTATCCGTAC ACGTTTGGAC AAGGGACCAA GCTGGAAATC 60  
AAA 63

(2) INFORMATION FOR SEQ ID NO: 42:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 67 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

~~23~~  
96

98

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 42:

GATCGGATCC AACTGAGGAA GCAAAGTTTA AATTCTACTC ACGTTTGATT TCCAGCTTGG  
TCCCTTG

60

67

(2) INFORMATION FOR SEQ ID NO: 43:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 43:

GATCAAGCTT CATGATGAGT CCT

23

(2) INFORMATION FOR SEQ ID NO: 44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide



(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 44:

GCAAGAGATG GAAGCTGGTT G

21

(2) INFORMATION FOR SEQ ID NO: 45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

CAACCAGCTT CCATCTCTTG C

21

(2) INFORMATION FOR SEQ ID NO: 46:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

~~25~~  
98

100

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:

AGATTCCAGT TTGGATACCA A

21

(2) INFORMATION FOR SEQ ID NO: 47:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:

TTGGTATCCA AACTGGAATC TGGG

24

(2) INFORMATION FOR SEQ ID NO: 48:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:

ATGGGTAAAT TGCATGCAGT AATA

24

~~26~~  
99

101

(2) INFORMATION FOR SEQ ID NO: 49:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 24 bases
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: oligonucleotide
- (ix) FEATURE:
  - (A) NAME/KEY: PCR primer
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 49:

TACTGCATGC AATTACCCA TTAT

24

(2) INFORMATION FOR SEQ ID NO: 50:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 bases
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: oligonucleotide
- (ix) FEATURE:
  - (A) NAME/KEY: PCR primer
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 50:

GATCGGATCC AACTGAGGAA GCAAAG

26

(2) INFORMATION FOR SEQ ID NO: 51:

- (i) SEQUENCE CHARACTERISTICS:

~~-27-~~  
100

102

(A) LENGTH: 30 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 51:

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu

5 10

Leu Gln Arg Pro Gly Ala Ser Val Lys Leu

15 20

Ser Cys Lys Ala Ser Gly Tyr Ile Phe Thr

25 30

(2) INFORMATION FOR SEQ ID NO: 52:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 52:

Gln Val Gln Leu Val Gln Ser Gly Ala Glu

5 10

Val Lys Lys Pro Gly Ala Ser Val Lys Val

15 20

~~28~~  
101

103

Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr

25

30

(2) INFORMATION FOR SEQ ID NO: 53:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 53:

Trp Val Lys Gln Arg Pro Lys Gln Gly Leu

5

10

Glu Leu Val Gly

(2) INFORMATION FOR SEQ ID NO: 54:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 54:

Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

5

10

~~-29~~  
102

104

Glu Trp Met Gly

(2) INFORMATION FOR SEQ ID NO: 55:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 55:

Lys Ala Thr Leu Thr Ala Asp Thr Ser Ser

5 10

Asn Thr Ala Tyr Met Gln Leu Ser Ser Leu

15 20

Thr Ser Glu Asp Thr Ala Thr Tyr Phe Cys

25 30

Ala Arg

(2) INFORMATION FOR SEQ ID NO: 56:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

~~-30~~  
103

105

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 56:

Arg Val Thr Met Thr Arg Asp Thr Ser Ile

5 10

Ser Thr Ala Tyr Met Glu Leu Ser Arg Leu

15 20

Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys

25 30

Ala Arg

(2) INFORMATION FOR SEQ ID NO: 57:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 57:

Trp Gly Gln Gly Thr Leu Val Thr Val Ser

5 10

Ser

(2) INFORMATION FOR SEQ ID NO: 58:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

31-  
104

106

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 58:

Trp Gly Gln Gly Thr Leu Val Thr Val Ser

5

10

Ser

(2) INFORMATION FOR SEQ ID NO: 59:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 88 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 59:

GATCAAGCTT CATGAAATGC AGGTGGATCA TCCTCTTCTT GATGGCAGTA GCTACAGGTA

60

AGGCACTCCC AAGTCCTAAA CTTGAGAG

88

(2) INFORMATION FOR SEQ ID NO: 60:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 87 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

~~-32-~~  
105

107



(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 60:

CACCTGTGAG TTGACCCCTG TTGAAAGAAA TCCAAAGATA GTGTCACTGT CTCCAAGTG 60

TATGATCTCT CAAGTTTAGG ACTTGGG 87

(2) INFORMATION FOR SEQ ID NO: 61:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 61:

ACAGGGGTCA ACTCACAGGT GCAGCTGGTG CAGTCTGGGG CTGAGGTGAA GAAGCCTGGG 60

GCCTCAGTGA AGGTCTCC 78

(2) INFORMATION FOR SEQ ID NO: 62:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

~~-33~~  
106

108

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 62:

GGCCTGTCGC ACCCAGTACA TATAGTACTC GGTGAAGGTG TATCCAGAAG CCTTGCAGGA	60
GACCTTCACT GAGGCCCC	78

(2) INFORMATION FOR SEQ ID NO: 63:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 63:

ATGTACTGGG TGCGACAGGC CCCTGGACAA GGGCTTGAGC TGATGGGAAG GATCGATCCT	60
GAAGACGGTA GTATTGAT	78

(2) INFORMATION FOR SEQ ID NO: 64:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

~~-34~~  
107

109

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 64:

TGTGCTAGAG GACGTGTCAG CGGTCAGGGT GACCTTTTTC TTAAACTTCT CAACATAATC

60

AATACTACCG TCTTCAGG

78

(2) INFORMATION FOR SEQ ID NO: 65:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 84 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 65:

GCTGACACGT CCTCTAGCAC AGCCTACATG GAGCTGAGCA GCCTGACCTC TGACGACACG

60

GCCGTGTATT ACTGTGCGAG AGGA

84

(2) INFORMATION FOR SEQ ID NO: 66:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 87 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

~~-35~~  
108

110

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 66:

GGACTCACCT GAGGAGACGG TGACCAGGGT TCCTTGGCCC CAGTAAGCAA ACCTATAGTT 60

AAACTTTCCT CTCGCACAGT AATACAC 87

(2) INFORMATION FOR SEQ ID NO: 67:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 67:

ACCGTCTCCT CAGGTGAGTC CTTACAACCT CTCTCTTCTA TTCAGCTTAA ATAGATTTTA 60

CTGCATTG 69

(2) INFORMATION FOR SEQ ID NO: 68:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

-36-  
109

//

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 68:

CCTAGTCCTT CATGACCTGA AATTCAGATA CACACATTTT CCCCCAACA AATGCAGTAA

60

AATCTATTT

69

(2) INFORMATION FOR SEQ ID NO: 69:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 72 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 69:

TTCAGGTCAT GAAGGACTAG GGACACCTTG GGAGTCAGAA AGGGTCATTG GGAGCCCGGG

60

CTGATGCAGA CA

72

(2) INFORMATION FOR SEQ ID NO: 70:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 72 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

37  
110

112

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 70:

GATCGGATCC CTATAAATCT CTGGCCATGA AGTCTGGGAG CTGAGGATGT CTGTCTGCAT 60  
CAGCCCGGGC TC 72

(2) INFORMATION FOR SEQ ID NO: 71:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 71:

GATCAAGCTT CATGAAATGC AGGTG 25

(2) INFORMATION FOR SEQ ID NO: 72:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 72:

CACCTGTGAG TTGACCCCTG TTG

23

(2) INFORMATION FOR SEQ ID NO: 73:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 73:

ACAGGGGTCA ACTCACAGGT G

21

(2) INFORMATION FOR SEQ ID NO: 74:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 74:

GGCCTGTCGC ACCCAGTACA T

21

(2) INFORMATION FOR SEQ ID NO: 75:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 75:

ATGTACTGGG TGCGACAGGC C

21

(2) INFORMATION FOR SEQ ID NO: 76:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 bases

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: PCR primer

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 76:



TGTGCTAGAG GACGTGTCAG C

21

- (2) INFORMATION FOR SEQ ID NO: 77:
- (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 21 bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: oligonucleotide
  - (ix) FEATURE:
    - (A) NAME/KEY: PCR primer
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 77:

GCTGACACGT CCTCTAGCAC A

21

- (2) INFORMATION FOR SEQ ID NO: 78:
- (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 21 bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: oligonucleotide
  - (ix) FEATURE:
    - (A) NAME/KEY: PCR primer
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 78:

GGACTCACCT GAGGAGACGG T

21

~~-41-~~  
114

116

(2) INFORMATION FOR SEQ ID NO: 79:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 bases
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: oligonucleotide
- (ix) FEATURE:
  - (A) NAME/KEY: PCR primer
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 79:

ACCGTCTCCT CAGGTGAGTC C

21

(2) INFORMATION FOR SEQ ID NO: 80:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 bases
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: oligonucleotide
- (ix) FEATURE:
  - (A) NAME/KEY: PCR primer
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 80:

CCTAGTCCTT CATGACCTGA A

21

(2) INFORMATION FOR SEQ ID NO: 81:

- (i) SEQUENCE CHARACTERISTICS:

~~-42~~  
115

117

- (A) LENGTH: 21 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: oligonucleotide
- (ix) FEATURE:
  - (A) NAME/KEY: PCR primer
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 81:

.TTCAGGTCAT GAACGACTAG G

21

- (2) INFORMATION FOR SEQ ID NO: 82:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 26 bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: oligonucleotide
  - (ix) FEATURE:
    - (A) NAME/KEY: PCR primer
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 82:

GATCGGATCC CTATAAATCT CTGGCC

26

- (2) INFORMATION FOR SEQ ID NO: 83:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 761 bases
    - (B) TYPE: nucleic acid

~~43~~  
116

118

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: Nucleotide sequence encoding LO-CD2a

V<sub>L</sub> chain.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 83:

ATGATGAGTC CTGTCCAGTC CCTGTTTCTG TTATTGCTTT GGATTCTGGG TAAGTAGAGA	60
ATGAGTTACA GGACAAGAAT GGGGATGGAG GATGAGTTCT GACTGCCCAT GTTGGCTGTC	120
CATGTGTGGT AAGGCAGGTC CTATTTTCTA AGATGGACAC TTGAGATTCC ATTACTTGAT	180
AATGAGAAAT TACAGATGAG ATAGGATTTG TGCTAAGAGG ATTCTAATGT AGATGAGAAG	240
GTGTATGCCA TTTAGGATCT GCAACCGAAT TGTTTTGTGA AAAAGCATTT GGTATATTTT	300
TTAAAAATCA CAAAACACAC CGGGATCTCA CAGGAAATGA GTAACAAAAA GTAATTCACA	360
AAGATTGGTT GCAAATTTTG CACATAACTT TGTTCGTATC TATTATAATT TCAGGAACCA	420
ATGGTGATGT TGTGCTGACC CAGACTCCAC CTACTTTATT GGCTACCATT GGACAATCAG	480
TCTCCATCTC TTGCAGGTCA AGTCAGAGTC TCTTACATAG TAGTGGAAC ACCTATTTAA	540
ATTGGTTGCT ACAGAGGACA GGCCAATCTC CACAGCCGCT AATTTATTTG GTATCCAAAC	600
TGGAATCTGG GGTCCCCAAC AGGTTCAAGT GCAGTGGGTC AGGAACAGAT TTCACACTCA	660
AAATCAGTGG AGTGGAAGCT GAGGATTTGG GGGTTTATTA CTGCATGCAA TTTACCCATT	720
ATCCGTACAC GTTTGGAGCT GGGACCAAGC TGGAAGTGA A	761

(2) INFORMATION FOR SEQ ID NO: 84:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 132 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

~~44~~

117

119

(ix) FEATURE:

(A) NAME/KEY: Chimeric LO-CD2a V<sub>L</sub> Chain

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 84:

Met Met Ser Pro Val Gln Ser Leu Phe  
-20 -15  
Leu Leu Leu Leu Trp Ile Leu Gly Thr Asn  
-10 -5  
  
Gly Asp Val Val Leu Thr Gln Thr Pro  
-1 +1 5  
Pro Thr Leu Leu Ala Thr Ile Gly Gln Ser  
10 15  
Val Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu  
20 25  
Leu His Ser Ser Gly Asn Thr Tyr Leu Asn Trp  
30 35 40  
Leu Leu Gln Arg Thr Gly Gln Ser Pro Gln  
45 50  
Pro Leu Ile Tyr Leu Val Ser Lys Leu Glu  
55 60  
Ser Gly Val Pro Asn Arg Phe Ser Gly Ser  
65 70  
Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
75 80  
Ser Gly Val Glu Ala Glu Asp Leu Gly Val

~~45-~~  
118

120

	85		90
Tyr	Tyr	Cys	Met
Gln	Phe	Thr	His
Tyr	Pro		
	95		100
Tyr	Thr	Phe	Gly
Ala	Gly	Thr	Lys
Leu	Glu		
	105		110
Leu	Lys		

(2) INFORMATION FOR SEQ ID NO: 85:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 491 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: oligonucleotide

(ix) FEATURE:

(A) NAME/KEY: Nucleotide sequence encoding LO-CD2a

V<sub>H</sub> chain.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 85:

ATGAAATGCA GGTGGATCAT CCTCTTCTTG ATGGCAGTAG CTACAGGTAA GGCACCTCCCA	60
AGTCCTAAAC TTGAGAGATC ATACACTTGG GAGACAGTGA CACTATCTTT GGATTTCTTT	120
CAACAGGGGT CAACTCAGAA GTCCAGCTGC AGCAATCTGG GCCTGAGCTT CAGAGACCCG	180
GGGCCTCAGT CAAGTTGTCG TGCAAGGCTT CTGGCTATAT ATTTACAGAA TACTATATGT	240
ACTGGGTGAA GCAGAGGCCT AAACAGGGCC TGGAAATTAGT AGGAAGGATC GATCCTGAAG	300
ACGGTAGTAT TGATTATGTT GAGAAGTTCA AAAAGAAGGC CACTGACT GCAGATACAT	360
CGTCCAACAC AGCCTACATG CAACTCAGCA GCCTGACATC TGAGGACACA GCAACCTATT	420
TTTGTGCTAG GGGAAAATTC AACTATCGAT TTGCTTACTG GGGCCAAGGC ACCCTCGTCA	480
CAGTCTCCTC A	491

-46-  
119

121

(2) INFORMATION FOR SEQ ID NO: 86:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 137 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Amino acid sequence of chimeric LO-  
CD2a V<sub>H</sub> chain.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 86:

Met Lys Cys Arg Trp Ile Ile Leu Phe Leu

-19 -15 -10

Met Ala Val Ala Thr Gly Val Asn Ser Glu

-5 -1 +1

Val Gln Leu Gln Gln Ser Gly Pro Glu

5 10

Leu Gln Arg Pro Gly Ala Ser Val Lys Leu

15 20

Ser Cys Lys Ala Ser Gly Tyr Ile Phe Thr

25 30

Glu Tyr Tyr Met Tyr Trp Val Lys Gln Arg

35 40

Pro Lys Gln Gly Leu Glu Leu Val Gly Arg

45 50

~~47~~  
120

122

Ile Asp Pro Glu Asp Gly Ser Ile Asp Tyr

55 60

Val Glu Lys Phe Lys Lys Lys Ala Thr Leu

65 70

Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr

75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp

85 90

Thr Ala Thr Tyr Phe Cys Ala Arg Gly Lys

95 100

Phe Asn Tyr Arg Phe Ala Tyr Trp Gly Gln

105 110

Gly Thr Leu Val Thr Val Ser Ser

115

(2) INFORMATION FOR SEQ ID NO: 87:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 112 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Rat LO-CD2a light chain variable  
region.



(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 87:

Asp	Val	Val	Leu	Thr	Gln	Thr	Pro	Pro	Thr
				5					10
Leu	Leu	Ala	Thr	Ile	Gly	Gln	Ser	Val	Ser
				15					20
Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	Leu	Leu
				25					30
His	Ser	Ser	Gly	Asn	Thr	Tyr	Leu	Asn	Trp
				35					40
Leu	Leu	Gln	Arg	Thr	Gly	Gln	Ser	Pro	Gln
				45					50
Pro	Leu	Ile	Tyr	Leu	Val	Ser	Lys	Leu	Glu
				55					60
Ser	Gly	Val	Pro	Asn	Arg	Phe	Ser	Gly	Ser
				65					70
Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile
				75					80
Ser	Gly	Val	Glu	Ala	Glu	Asp	Leu	Gly	Val
				85					90
Tyr	Tyr	Cys	Met	Gln	Phe	Thr	His	Tyr	Pro
				95					100
Tyr	Thr	Phe	Gly	Ala	Gly	Thr	Lys	Leu	Glu
				105					110
Leu	Lys								

~~49~~  
h2

124

(2) INFORMATION FOR SEQ ID NO: 88:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 112 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Humanized LO-CD2a light chain  
variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 88:

Asp Val Val Met Thr Gln Ser Pro Pro Ser

5 10

Leu Leu Val Thr Leu Gly Gln Pro Ala Ser

15 20

Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu

25 30

His Ser Ser Gly Asn Thr Tyr Leu Asn Trp

35 40

Leu Leu Gln Arg Pro Gly Gln Ser Pro Gln

45 50

Pro Leu Ile Tyr Leu Val Ser Lys Leu Glu

55 60

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser

65 70

~~50~~  
123

125

Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile

75 80

Ser Gly Val Glu Ala Glu Asp Val Gly Val

85 90

Tyr Tyr Cys Met Gln Phe Thr His Tyr Pro

95 100

Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu

105 110

Ile Lys

(2) INFORMATION FOR SEQ ID NO: 89:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 112 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Light chain variable region of  
HUM5400

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 89:

Asp Val Val Met Thr Gln Ser Pro Leu Ser

5 10

Leu Pro Val Thr Leu Gly Gln Pro Ala Ser

15 20

~~-51-~~  
124

126

Ile Ser Cys Arg Ser Ser Gln Ser Leu Val	
	25 30
Tyr Ser Asp Gly Asn Thr His Leu Asn Trp	
	35 40
Phe Gln Gln Arg Pro Gly Gln Ser Pro Arg	
	45 50
Arg Leu Ile Tyr Lys Val Ser Asn Arg Asp	
	55 60
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser	
	65 70
Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile	
	75 80
Ser Arg Val Glu Ala Glu Asp Val Gly Val	
	85 90
Tyr Tyr Cys Met Gln Gly Thr His Trp Pro	
	95 100
Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu	
	105 110
Ile Lys	

- (2) INFORMATION FOR SEQ ID NO: 90:
- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 807 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polynucleotide

(ix) FEATURE:

(A) NAME/KEY: Nucleotide sequence encoding  
humanized LO-CD2a light chain variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 90:

AAGCTTCATG ATGAGTCCTG TCCAGTCCCT GTTTCTGTGA TTGCTTTGGA TTCTGGGTAA	60
GTAGAGAATG AGTTACAGGA CAAGAATGGG GATGGAGGAT GAGTTCTGAC TGCCCATGTT	120
GGCTGTCCAT GTGTGGTAAG GCAGGTCCTA TTTTCTAAGA TGGACACTTG AGATTCCATT	180
ACTTGATAAT GAGAAATTAC AGATGAGATA GGATTTGTGC TAAGAGGATT CTAATGTAGA	240
TGAGAAGGTG TATGCCATTT AGGATCTGCA ACCGAATTGT TTTGTGAAAA AGCATTGGT	300
ATATTTTTTA AAAATCACAA AACACACCGG GATCTCACAG GAAATGAGTA ACAAAAAGTA	360
ATTCACAAAG ATTGGTTGCA AATTTTGCAC ATAACTTTGT TCTGATCTAT TATAATTTCA	420
GGAACCAATG GTGATGTTGT GATGACCCAG AGTCCACCTT CATTATTGGT AACCTTGGGA	480
CAACCAGCTT CCATCTCTTG CAGGTCAAGT CAGAGTCTCT TACATAGTAG TGGAAACACC	540
TATTTAAATT GGTGCTACA GAGGCCAGGC CAATCTCCAC AGCCGCTAAT TTATTTGGTA	600
TCCAAACTGG AATCTGGGGT CCCCACAGG TTCAGTGGCT CAGGGAGTGG AACAGATTTT	660
ACACTCAAAA TCAGTGGAGT GGAAGCTGAG GATGTGGGGG TTTATTACTG CATGCAATTT	720
ACCCATTATC CGTACACGTT TGGACAAGGG ACCAAGCTGG AAATCAAACG TGAGTAGAAT	780
TTAAACTTTG CTTCTCAGT TGGATCC	807

(2) INFORMATION FOR SEQ ID NO: 91:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 132 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

53  
126

128

(ix) FEATURE:

(A) NAME/KEY: Humanized LO-CD2a light chain  
variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 91:

Met Met Ser Pro Val Gln Ser Leu Phe Leu Leu

-20 -15 -10

Leu Leu Trp Ile Leu Gly Thr Asn Gly Asp

-5 -1 +1

Val Val Met Thr Gln Ser Pro Pro Ser

5 10

Leu Leu Val Thr Leu Gly Gln Pro Ala Ser

15 20

Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu

25 30

His Ser Ser Gly Asn Thr Tyr Leu Asn Trp

35 40

Leu Leu Gln Arg Pro Gly Gln Ser Pro Gln

45 50

Pro Leu Ile Tyr Leu Val Ser Lys Leu Glu

55 60

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser

65 70

Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile

75 80

Ser Gly Val Glu Ala Glu Asp Val Gly Val

~~54~~  
127

129

	85	90
Tyr Tyr Cys Met Gln Phe Thr His Tyr Pro		
	95	100
Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu		
	105	110
Ile Lys		

(2) INFORMATION FOR SEQ ID NO: 92:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 118 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

- (A) NAME/KEY: Rat LO-CD2a heavy chain variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 92:

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu	
	5 10
Leu Gln Arg Pro Gly Ala Ser Val Lys Leu	
	15 20
Ser Cys Lys Ala Ser Gly Tyr Ile Phe Thr	
	25 30
Glu Tyr Tyr Met Tyr Trp Val Lys Gln Arg	

~~-55~~  
128

130

35	40
Pro Lys Gln Gly Leu Glu Leu Val Gly Arg	
45	50
Ile Asp Pro Glu Asp Gly Ser Ile Asp Tyr	
55	60
Val Glu Lys Phe Lys Lys Lys Ala Thr Leu	
65	70
Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr	
75	80
Met Gln Leu Ser Ser Leu Thr Ser Glu Asp	
85	90
Thr Ala Thr Tyr Phe Cys Ala Arg Gly Lys	
95	100
Phe Asn Tyr Arg Phe Ala Tyr Trp Gly Gln	
105	110
Gly Thr Leu Val Thr Val Ser Ser	
115	

(2) INFORMATION FOR SEQ ID NO: 93:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 118 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

~~-56-~~  
129

131



(ix) FEATURE:

(A) NAME/KEY: Humanized LO-CD2a heavy chain  
variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 93:

Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu
				5					10
Val	Lys	Lys	Pro	Gly	Ala	Ser	Val	Lys	Val
				15					20
Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr
				25					30
Glu	Tyr	Tyr	Met	Tyr	Trp	Val	Arg	Gln	Ala
				35					40
Pro	Gly	Gln	Gly	Leu	Glu	Leu	Met	Gly	Arg
				45					50
Ile	Asp	Pro	Glu	Asp	Gly	Ser	Ile	Asp	Tyr
				55					60
Val	Glu	Lys	Phe	Lys	Lys	Lys	Val	Thr	Leu
				65					70
Thr	Ala	Asp	Thr	Ser	Ser	Ser	Thr	Ala	Tyr
				75					80
Met	Glu	Leu	Ser	Ser	Leu	Thr	Ser	Asp	Asp
				85					90
Thr	Ala	Val	Tyr	Tyr	Cys	Ala	Arg	Gly	Lys
				95					100
Phe	Asn	Tyr	Arg	Phe	Ala	Tyr	Trp	Gly	Gln

~~57-~~  
130

132

105

110

Gly Thr Leu Val Thr Val Ser Ser

115

(2) INFORMATION FOR SEQ ID NO: 94:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 123 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Human Amu 5-3 heavy chain variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 94:

Gln Val Gln Leu Val Gln Ser Gly Ala Glu

5

10

Val Lys Lys Pro Gly Ala Ser Val Lys Val

15

20

Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr

25

30

Gly Tyr Tyr Met His Trp Val Arg Gln Ala

35

40

Pro Gly Gln Gly Leu Glu Trp Met Gly Arg

45

50

~~58~~

13

133

Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr	
	55 60
Ala Gln Lys Phe Gln Gly Arg Val Thr Met	
	65 70
Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr	
	75 80
Met Glu Leu Ser Arg Leu Arg Ser Asp Asp	
	85 90
Thr Ala Val Tyr Tyr Cys Ala Arg Gly Arg	
	95 100
Thr Glu Tyr Ile Val Val Ala Glu Gly Phe	
	105 110
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr	
	115 120
Val Ser Ser	

- (2) INFORMATION FOR SEQ ID NO: 95:
- (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 701 bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: polynucleotide
  - (ix) FEATURE:

(A) NAME/KEY: Nucleotide sequence encoding LO-  
CD2a heavy chain variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 95:

AAGCTTCATG AAATGCAGGT GGATCATCCT CTTCTTGATG GCAGTAGCTA CAGGTAAGGC	60
ACTCCCAAGT CCTAAACTTG AGAGATCATA CACTTGGGAG ACAGTGACAC TATCTTTGGA	120
TTTCTTTCAA CAGGGGTCAA CTCACAGGTG CAGCTGGTGC AGTCTGGGGC TGAGGTGAAG	180
AAGCCTGGGG CCTCAGTGAA GGTCTCCTGC AAGGCTTCTG GATACACCTT CACCGAGTAC	240
TATATGTACT GGGTGCACACA GGCCCCTGGA CAAGGGCTTG AGCTGATGGG AAGGATCGAT	300
CCTGAAGACG GTAGTATTGA TTATGTTGAG AAGTTTAAGA AAAAGGTCAC CCTGACCGCT	360
GACACGTCCT CTAGCACAGC CTACATGGAG CTGAGCAGCC TGACCTCTGA CGACACGGCC	420
GTGTATTACT GTGCGAGAGG AAAGTTTAAC TATAGGTTTG CTTACTGGGG CCAAGGAACC	480
CTGGTCACCG TCTCCTCAGG TGAGTCCTTA CAACCTCTCT CTTCTATTCA GCTTAAATAG	540
ATTTTACTGC ATTTGTTGGG GGGGAAATGT GTGTATCTGA ATTTTCAGGTC ATGAAGGACT	600
AGGGACACCT TGGGAGTCAG AAAGGGTCAT TGGGAGCCCG GGCTGATGCA GACAGACATC	660
CTCAGCTCCC GGACTTCATG GCCAGAGATT TATAGGGATC C	701

(2) INFORMATION FOR SEQ ID NO: 96:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 137 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: polypeptide

(ix) FEATURE:

(A) NAME/KEY: Humanized LO-CD2a heavy chain  
variable region.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 96:

Met Lys Cys Arg Trp Ile Ile Leu Phe Leu

~~60~~  
133

135

-19	-15	-10
Met Ala Val Ala Thr Gly Val Asn Ser Gln		
	-5	-1 1
Val Gln Leu Val Gln Ser Gly Ala Glu		
	5	10
Val Lys Lys Pro Gly Ala Ser Val Lys Val		
	15	20
Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr		
	25	30
Glu Tyr Tyr Met Tyr Trp Val Arg Gln Ala		
	35	40
Pro Gly Gln Gly Leu Glu Leu Met Gly Arg		
	45	50
Ile Asp Pro Glu Asp Gly Ser Ile Asp Tyr		
	55	60
Val Glu Lys Phe Lys Lys Lys Val Thr Leu		
	65	70
Thr Ala Asp Thr Ser Ser Ser Thr Ala Tyr		
	75	80
Met Glu Leu Ser Ser Leu Thr Ser Asp Asp		
	85	90
Thr Ala Val Tyr Tyr Cys Ala Arg Gly Lys		
	95	100
Phe Asn Tyr Arg Phe Ala Tyr Trp Gly Gln		
	105	110

~~61~~  
134

136

Gly Thr Leu Val Thr Val Ser Ser

P2cont,

115

~~62~~  
135

137